



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/522,757

01/28/2005

Michael Richard Richardson

19941 (XA2017)

9342

23389 7590 07/21/2009
SCULLY SCOTT MURPHY & PRESSER, PC
400 GARDEN CITY PLAZA
SUITE 300
GARDEN CITY, NY 11530

EXAMINER

TAYONG, HELENE E

ART UNIT

PAPER NUMBER

2611

MAIL DATE

DELIVERY MODE

07/21/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/522,757	Applicant(s) RICHARDSON, MICHAEL RICHARD	
	Examiner HELENE TAYONG	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05/06/09.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-8 and 12-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-8 and 12-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Acknowledgement is made of amendment filed 05/06/09. Claims 2-8 and 12-23 are pending and have been considered below.

Response to Arguments

2. Applicants arguments regarding the rejection of claims 2-8 and 12-23 under 35 U.S.C. 103(a) as being unpatentable over Mege et al (US (20010005406) in view of Critchlow (US 5276706) have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-8 and 12-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mege et al (US (20010005406) in view of Critchlow (US 5276706) and further in view of Zhou (US6859491).

(1) with regards to claims 20 and 23;

Mege et al in (fig. 2) discloses a method of regenerating a remotely transmitted signal (pg. 3, [0037]) comprising a symbol stream (fig. 1, (5)

Art Unit: 2611

modulated (1) onto a carrier (3) in accordance with a predetermined standard (fig. 1 and 3, pg. 3, [0028]), the method including the steps of:

a) receiving the remotely transmitted signal having known characteristics (fig. 2, 10 and 9, pg. 3, [0037]);

b) determining frame timing of the received signal (fig. 2, 11, pg.3, [0039]-[0040]);

c) identifying the locations of sequences (synchronization pattern) within the signal from the frame timing (fig. 2, 11, pg.4, [0041]-[0044], page 5, [0057]);

d) identifying the structure of the sequences (page 3, [0036], page 5, [0066], pg. 7, [0067] and [0073]);

e) estimating phase shift values (ST) at the locations of the sequences (page 3, [0040], pg. 4, [0046]-0053]);

f) demodulating (fig. 2, 12) the symbol stream using the estimated phase shift (ST) values and the structure of the sequences (page 3, [0039], pg. 4, [0045]); and

g) remodulating (fig. 5, 1) the symbol stream (page 6, [0069], [0079], [0080]-[0082]);

wherein the sequences include one training sequences, synchronization signals (fig. 1,5, fig. 2, 11), frequency correction bursts (SF) (page 4, [0041]) (page 3, [0031]-0036], page 3, [0092], Table 1 and page 4, [0054]).

Mege et al discloses all of the subject matter disclosed above, but for specifically teaching

(a) estimating mean beat frequency

(b) wherein the training sequences include eight training sequences associated with data bursts and a ninth training sequence associated with dummy bursts.

(i) with regards to item (a) above;

However, Critchlow in the same endeavor (communication systems) discloses a system and method for minimizing frequency offsets (beat frequency) between digital communications. In (fig.1, 36), known sync pattern is rotated by a pattern rotator 37 to simulate fixed frequency offsets. The known sync pattern 36 is correlated with the sampled data by correlator 30 for a number of phase advances corresponding to the simulated fixed frequency offsets. The peak outputs 54 and 58 for the correlator 30 for the number of fixed frequency offsets is used to adjust the receiver's voltage oscillator to reduce the offset (col.1, lines 59-67, col. 5, lines 37-68 and col. 6, lines 1-36).

One of ordinary skill in the art at the time the applicant's invention was made would have been able to modify the invention of Meye et al as taught by Critchlow and estimate frequency offsets, thus reducing frequency offsets, proper frequency acquisition and less costly precision voltage controlled oscillators (col. 2, lines 52-57).

(ii) with regards to item (b) above;

However Zhou in the same endeavor GSM receiver, discloses in figs. 1a, 1b and fig. 2 estimating the timing position of data burst received in a data stream, where each data burst includes a number of bits comprising training sequences in a fixed location. In col. 3, lines 19 -27, there are five kinds of burst,

Art Unit: 2611

each burst is 156.26bits long, the length of the training sequence varies according to the type of data burst. In normal data burst the training sequence is 26 bits long. Data burst comprises a header portion, a first data portion, a training sequence, a second data portion, and a tail portion. The format and generation of each portion of the data burst will be well known to those skilled in the art (col. 3, lines 38-43).

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have utilized the GSM standard as taught by Zhou in a manner as claimed in this application for the benefit of calculating the most probably receiver sequences.

(2) with regards to claim 2;

Mege et al further discloses wherein step f) comprises the additional step of correcting the symbol stream prior to step g (fig. 6, 42 and 43, pg. 7, [0084]-[0085]).

(3) with regards to claim 3;

Mege et al further discloses wherein the step of correcting the symbol stream incorporates substitution of symbols in the symbol stream where the symbol stream is known a priori (page 3, [0031], [0038], fig. 6, 42 and 43, page 7, [0085]).

(4) with regards to claims 4,14 and 17;

Art Unit: 2611

Mege et al discloses all of the subject matter disclosed above, but for specifically teaching wherein step f) further comprises comparing demodulated symbols with known symbols to provide an estimate of the symbol error rate.

However, Critchlow in the same endeavor (regeneration of signals) discloses a system and method for minimizing frequency offsets (beat frequency) between digital communications. In (fig. 1, 36), known sync pattern is rotated by a pattern rotator 37 to simulate fixed frequency offsets. The known sync pattern 36 is correlated with the sampled data by correlator 30 for a number of phase advances corresponding to the simulated fixed frequency offsets. The peak outputs 54 and 58 for the correlator 30 for the number of fixed frequency offsets is used to adjust the receiver's voltage oscillator to reduce the offset (col.1, lines 59-67, col. 5, lines 37-68 and col. 6, lines 1-36).

One of ordinary skill in the art at the time the applicant's invention was made would have been able to modify the invention of Mege et al as taught by Critchlow and estimate frequency offsets, thus reduced frequency offsets, proper frequency acquisition and less costly precision voltage controlled oscillators (col. 2, lines 52-57).

(5) with regards to claims 5, 15 and 18;

Mege et al implicitly discloses in (fig. 2, (9) a radio stage) includes down converting the received signal to a nominal 0Hz intermediate frequency (page 3, [0037]).

(6) with regards to claims 6, 16 and 19;

Art Unit: 2611

Mege et al discloses in (fig. 2, (9) a radio stage) wherein step a) further includes digitizing the intermediate frequency signal to provide a digitized symbol stream in a complex signal domain (page 3, [0037]).

(7) with regards to claims 7;

Mege et al discloses samples of the synchronization patterns are stored in a memory 15 of the module 11 (fig. 4, 15 and pg. 4, [0046]), but does not specifically teach estimating mean beat frequency

However, Critchlow in the same endeavor (regeneration of signals) discloses a system and method for minimizing frequency offsets (beat frequency) between digital communications. In (fig. 1, 36), known sync pattern is rotated by a pattern rotator 37 to simulate fixed frequency offsets. The known sync patten 36 is correlated with the sampled data by correlator 30 for a number of phase advances corresponding to the simulated fixed frequency offsets. The peak outputs 54 and 58 for the correlator 30 for the number of fixed frequency offsets is used to adjust the receivers voltage oscillator to reduce the offset (col.1, lines 59-67, col. 5, lines 37-68 and col. 6, lines 1-36).

One of ordinary skilled in the art at the time the applicant's invention was made would have been able to modify the invention of Meye et al as taught by Critchlow and estimate frequency offsets and store in the memory, thus reduced frequency offsets, proper frequency acquisition and less costly precision voltage controlled oscillators (col. 2, lines 52-57).

Art Unit: 2611

(8) with regards to claim 8;

Mege et al further discloses wherein step e) further includes estimating residual phase shift of the signal and storing the estimated residual phase shift of the signal in the database (fig. 4, 14, pg.4, [0046]-[0053]).

(9) with regards to claim 12;

Mege et al further discloses the step of using training sequences (fig. 5, 11) and correlation peaks (fig. 4) for multi-path compensation (fig. 6, 42 and 43, pg. 7, [0084]-[0085]).

(10) with regards to claim 13;

Mege et al further discloses wherein channel estimation (RC) of data sequences are used for multi-path compensation (page 4, [0043]-0045) .

Art Unit: 2611

(11) with regards to claim 21;

Mege et al further wherein the training sequences include eight training sequences (several different synchronization sequences) associated with data bursts (fig. 2,5, page 4, [0054]).

(12) with regards to claim 22;

Mege et al further discloses using channel estimation of data sequences for multi-path compensation (page 4, [0044]).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Atobe et al (US 4525676) discloses PSK demodulation system having carrier frequency variation compensation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HELENE TAYONG whose telephone number is (571)270-1675. The examiner can normally be reached on Monday-Friday 8:00 am to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Liu Shuwang can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2611

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Helene Tayong/
Examiner, Art Unit 2611

July 18, 2009

/Shuwang Liu/

Supervisory Patent Examiner, Art Unit 2611